IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	Brehm, et al.	Examiner:	Grabowski, Kyle Robert
Serial No.:	10/599,066	Group Art Unit:	3725
Confirmation No:	3721	Docket:	1093-162 PCT/US/RCE
Filed:	September 19, 2006		
For:	Security and/or Valuable Document		

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

DECLARATION UNDER 37 C.F.R. § 1.132

Sir:

I, Dr. Ludwig Brehm, hereby declare and state as follows:

1. I am an inventor for the patent application identified above.

2. I have earned a doctorate degree in Chemistry (Dr. rer. nat.) from the University of Erlangen-Nuremberg "Friedrich Alexander" of Germany in 1986.

3. I have worked in the field of security printing inks, heat stamping technology, polymer electronics, metallo-organic compounds for LEONHARD KURZ Stiftung & Co. KG, Schwabacher Strasse 482, 90763 Fuerth, Germany since 1985.

4. I have analyzed the pending Office Action in the above-identified application dated August 2, 2010 and the references cited therein. I am fully familiar with the subject matter of the application and the issues raised in the subject Office Action.

5. The Office Action asserts that no factual evidence has been presented to support the contention that polyethylene terephthalate (PET) can not be printed, scattered, sprinkled or sprayed due to its viscosity. Accordingly, I hereby present this declaration in support of this well known property of PET.

6. PET is generally formed as a film produced by extrusion of melted, liquid PET. Usually the extruded and solid PET film is stretched to create mono-axially or biaxially oriented PET. During the stretching process the PET will be cooled and mechanically mono-axially or bi-axially stretched. Because of the combined cooling and stretching the PET partially crystallizes and a transparent semi-crystallized polymer is produced. That semi-crystallized PET is mechanically stable and transparent. Therefore a commonly used PET film comprises crystals which can be detected by checking its linear polarization properties with a linear polarization filter or by means of radiation with X-ray (use of a PET sample in powder form in X-ray radiation) for checking the Bragg scattering generated by the crystals in the PET polymer. The amount of Bragg scattering is a measure for the amount of crystals in the PET polymer.

7. More generally, PET is a thermoplastic polymer which cannot be printed, scattered, sprinkled or sprayed due to its intrinsic viscosity: it is simply too viscous for application in these ways. Generally, the dynamic (absolute) viscosity is a measure of the tangential force per unit area required to move one horizontal plate with respect to another, having the measured fluid disposed between the two opposed plates, at unit velocity while maintaining the plates a unit distance apart. Upon information and belief, PET has a dynamic viscosity of approximately 50 Pa·s to 200 Pa·s (or 50,000 mPa·s to 200,000 mPa·s, measured at 280°C) for PET films or sheets. In comparison most printing inks and common printing lacquers

have dynamic viscosities of approximately 50 mPa·s to 200 mPa·s (inks or lacquers for gravure printing, measured at room temperature) or 200 mPa·s to 1,000 mPa·s (inks or lacquers for screen printing, measured at room temperature). Thus, PET clearly has a much higher dynamic viscosity as compared to other common substances used in printing and is far too viscous to be printed, scattered, sprinkled or sprayed. For this reason, PET is typically used to form films or items of greater thickness by extrusion. It should also be noted that PET is solid at room temperature (which is the common measurement temperature for the viscosity of printing inks and lacquers). Also, most printing inks and common printing lacquers would be vaporized or pyrolyzed at 280°C (measurement temperature for the viscosity of PET).

8. Additionally, there are a very limited number of solvents which can be used to solve PET, the most common being phenol or its derivates, which are malodorous, toxic substances. Also, a very high level of heat is required to dissolve PET. During the evaporation of phenol, a partial ester interchange takes place, resulting in low-molecular phenol esters of the phthalic acid. Such environments are not suitable for printing on typical substrates, such as paper or even polymer mixes. Accordingly, PET is not suitable to be printed, scattered, sprinkled or sprayed.

9. The proposed claim amendments, clearly recite "a sealing layer being formed from a lacquer layer that can be applied by at least one of printing, scattering, sprinkling and spraying." As PET could not be applied in these ways, due in part to its intrinsic viscosity, the currently amended claims would not be obvious in view of the references cited in the subject Office Action.

10. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. Further that these statements were made with the knowledge that willfully false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code, and that such willfully false statements may jeopardize the validity of the application of any patent issued thereon.

Respectfully submitted,

Dated: Fürth, 10.11.2010

Dr. Ludwig Brehm

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